

## Chapter – 2 Cardiovascular system

### Topic: ANGINA and MYOCARDIAL INFARCTION

#### 2.1

#### Introduction and Etiopathogenesis

**Angina pectoris:** Angina is chest pain or discomfort caused when your heart muscle doesn't get enough oxygen-rich blood. Angina pain may even feel like indigestion. But, angina is not a disease. Any obstruction in the coronary artery of the heart due to deposition or blockage, leads to chest pain or any discomfort and ischemia in the heart muscles called as the angina pectoris.

The word angina means a type of chest caused by reduced blood flow to the heart. It is not a disease it is only a condition which occurs in the heart disease.

**Medical conditions**, such as Atherosclerosis, cause the walls of the blood vessels to become narrow, thereby decreasing the flow of blood. During resting, the narrowed arteries allow enough blood to reach the heart. However, the heart requires more blood than it receives during emotional stress or strenuous physical activity. Such conditions require the heart to work harder, thereby causing angina pectoris.

It is mainly three types—

- 1. Stable angina:** pain only in exertion and relieves with rest and medication. Deposition of the fatty material in the inner wall of the coronary artery (atherosclerosis).
- 2. Unstable angina (Acute coronary syndrome):** angina at rest or sudden onset with rapid increase with severity (due to transit subtotal obstruction of coronary artery). Any damage in the coronary arteries, causing blood clot and partial blockage (atherosclerosis with clot).
- 3. Vazospastic angina (variant or Prinzmetal):** caused by coronary artery spasm. variation in the coronary artery diameter by any condition leads to variant angina also called as coronary spasm. Also known as Angina inversa.
- 4. Decubitus angina:** pain on lying down
- 5. Cardiac syndrome X:** sometimes known as microvascular angina is characterized by angina-like chest pain.

**Myocardial Infraction:** It is also called as the Heart Attack or myocardial necrosis. It is the critical condition arises due to the myocardial tissue death due to lack of the blood supply. It begins when any blockage/obstruction occurs in the arteries.

Stages of myocardial infarctions.

Types Clinical consideration:

**Type-1 MI** Spontaneous MI due to rupture/damage of coronary artery.

**Type-2 MI** Appear due to either increase oxygen demand or decreased blood flow.

**Type-3 MI** Due to starting myocardial necrosis.

**Type-4 MI** Due to thrombotic occlusion of a coronary stent.

**Type-5 MI** Associated with cardiac surgery.

## 2.2

### Clinical manifestations

#### Signs & symptoms:

- ❖ Pain in your arms, neck, jaw, shoulder or back accompanying chest pain
- ❖ Chest pain or discomfort, possibly described as pressure,
- ❖ Squeezing,
- ❖ Burning or fullness Nausea.
- ❖ Fatigue.
- ❖ Shortness of breath.
- ❖ Sweating.
- ❖ Dizziness

## 2.3

### Pharmacological managements

- 1. Beta blockers: e.g.** Metoprolol, Propranolol, Atenolol, Alprenolol
- 2. Potassium channel openers: e.g.** Nicorandil
- 3. Calcium channel blockers: e.g.** Amlodipine, Verapamil, bevantolol, diltiazem, nitrendipine.
- 4. Nitrates:**
  - a. Long acting nitrates: e.g.** Isosorbide dinitrate, Molsidomine.
  - b. Short acting nitrates: e.g.** Nitroglycerin, Erythrityl tetranitrate.
- 5. Other drugs: e.g.** Oxyfedrin, Ivabradine, Trimetazidine, Dipyridamole, Acadesine

## 2.4

### Non-pharmacological management

- ❖ Proper routine of the regular activities (wake up, sleeps, natural urges).
- ❖ Regular exercise and workout (prevents the fat deposition).
- ❖ Yoga and meditation (which maintain the oxygen and carbon dioxide level).
- ❖ Proper diet chart after consulting the specialist and follow them.

- ❖ Take- green vegetables, natural fruit juice, less fatty substance, and avoid the street food items.
- ❖ Avoid the polluted area and spend the time where fresh air blown.

## 2.5

## Detection Test

- Electrocardiogram (ECG or EKG).
- Stress test.
- Echocardiogram.
- Nuclear stress test.
- Chest X-ray.
- Blood tests.
- Coronary angiography.
- Cardiac computerized tomography (CT) scan